

REMARKS – General

By the above amendment, applicant has rewritten all the claims to define the invention more particularly and distinctly so as to overcome the technical
5 rejections and define the invention patentably over the prior art.

Claim Objections has been overcome

The last O.A. rejected the Claims 7-10. Claim 7-10 have been rewritten.
Applicant requests reconsideration of these rejections.

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The Objection To The Claim Rejection Under 35 USC § 112

The last O.A. rejected the Claims 10. Claim 10 have been rewritten. Applicant requests reconsideration of this rejection.

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The Objection To The Claim Rejection Under 35 USC § 102

The last O.A. rejected the Claims 7 on Volz et al. Claim 7 have been rewritten as new claim 24 to define the patentably over the reference. Applicant requests
20 reconsideration of this rejection, as now applicable to claim 24, for the following reasons:

(1) The expansion zone apparatus is different. In the prior art of Volz et al., the expansion zone is formed by mount base assembly 18 to mother board 12 by “fastening means 22” and “ comprises a base 24 having an
25 open end 26 and a close end 28” (Col 3, lines 17- 19, Fig 1-2). In the applicant’s current invention, there is no base assembly. The expansion zone is an on PCB mother board expansion zone with a copper clad ground plan on the PCB surround with soldering zone 111 (fig.1, 1A, page 4 line 22--24). To be more specific (fig.1, 1A), the on PCB mother board

expansion zone of the applicant's current invention is fabricated to be part of the mother board PCB.

- 5 (2) The shield is different. In the prior art of Volz et al., the shield is provided by an additional special made sheet metal component "ground shielding member 64" (Col 4, lines 4-5, Fig 2). In the applicant's current invention, the mother board side shield is providing by the copper clad ground plane on the PCB surround with soldering zone 111 (fig.1, 1A , page 4 line 22--24). The on PCB copper clad ground plane with surrounding soldering zone is the part of complete shield apparatus.
- 10 (3) The connectors are different. Volz et al. uses flexible film member 52 provided in each through opening 32 in the contact retaining members 30 to provide electrical contact between mother board 12 and daughter board 14 (col.3, lines 62-70). In Volz et al.'s design, the daughter card need to have a special shaped design to match with its filmed electrical connection
- 15 shape, and with special grounding area to contact with the contact fingers 72 of ground shielding member 64 (col. 4, lines 16 – 24).
- 20 (4) The daughter cards and the mounting of daughter cards are different. In the art of Volz et al, the daughter card 14 is pressed on to the base assembly 18 by the cover member and electrically contact with motherboard via the film connector mean 52. This decided that the daughter card of Volz et al can only be the one that specially designed and match with the mechanism of the design. In applicant's invention, the mount of the daughter card is through the connectors 113, 123 in the expansion zone 11, 12. Because of the housing cover 20 is not part of the
- 25 mechanical structure for mounting of the add-on expansion daughter cards., any type of the add-on card as long as having the matching connector means and can be fit in to the expansion zone is suitable for the current apparatus. Obviously, the design scope and apparatus are

different, the applicant's current invention has better expansion capability with flexible of choice of daughter cards.

(5) Volz et al. did not provide heat conduction means for the daughter cards.

(6) Mounting of shield cover is different. Volz et al. disclosed a complicated mechanical structural way of mounting the cover member 20 on to the base assembly 18. The housing cover of the applicant's current invention is directly soldered onto the mother board.

(7) Volz et al. design takes more space and much more complicate than the applicant's current invention in terms of adding a daughter card to mother board.

In conclusion, not mentioning many difference in detail, in general, Volz et al. provide an apparatus for adding special shaped computer daughter cards with special mechanical structured base assembly and covering member, and provide a sequential connector means for adding the daughter cards. In Volz et al.'s design, the cover member 20, daughter card 14, and base assembly 18 as well as other means needed be mechanically assembly and attached together during the use. However, the applicant's current invention provided an apparatus for providing EMI shielding for add-on computer expansion daughter cards with part of the shielding apparatus (on PCB expansion zone 11, 12) direct fabricated on the mother board PCB, and soldering the housing cover 20 direct on to the mother board. It is obvious the applicant's current invention much less components and provides more flexible expansion capability for the computer than Volz et al.

The Objection To The Claim Rejection Under 35 USC § 103

The last O.A. rejected the Claims 8-9 as being unpatentable "over Volz et al. [US 5,378,169] in view of Higgins, III [US 5,639,989]". Claims 8-9 have been

rewritten. Applicant requests reconsideration of this rejection, as now applicable to claim 11-23, for the following reasons:

1) The shielding expansion zone (64, fig. 1-2) apparatus of Volz et al. is different than the applicant's current invention. The shielding expansion zone (64, fig. 1-2) apparatus of Volz et al. is part of the base assembly 18. The on PCB shield expansion zone 11 of the applicant's current invention is fabricate on the mother board 10 as part of the mother board 10 PCB (fig. 1, 1A)

2) Last OA suggested "to use the metallic material for the cover of Volz et al. and solder the cover on the printed circuit board, as suggested by Higgins, III, for the purpose of protecting against EMI interference". The applicant suggest it is improper to do so, because of :

a. It is impossible "to solder the shield housing cover onto the print circuit board of Volz et al." as suggested by last OA. There are two print circuit boards involved in Volz et al.'s apparatuses. The one is the expansion daughter card, obviously, if the cover member to be made in metal and solder onto the daughter card, then it will cause the changing of redesign of daughter card to be solderable with the cover member 20 and also the consequential changes of the sequential connectors (fig.1, fig.13-15)and base assembly 18 and so on. The other print circuit board is the mother board 12. The applicant suggest that it is impossible to fabricate the cover member 20 of Volz et al. and solder it directly on to the mother board 12, due to the fact that cover member 20 has to be mount onto the base assembly 18. If one has to solder the metallic cover member 20 onto the mother board 12, then base assembly 18 has to be removed, and the design scope of Volz et al. will be changed, because base assembly 18 is part of the apparatus of the sequentially connecting of Volz et al. Accordingly, the applicant

suggests that “to solder the shield housing cover onto the printed circuit board of Volz et al.” is improper.

- b. Volz et al.’s base design cannot be made on mother board. It is impossible to make a contact fingers on a PCB. Then the grounding design from daughter card to mother board will have to be changed.

- 3) even if they make the change then the heat conduction mean need to be add on, non of then suggest the heat conduct mean for providing heat conduction of the expansion daughter card.

The last O.A. rejected the Claims 10 **Under 35 USC § 103(a) as being unpatentable over Volz et al. in view of Higgins, III and Toy et al. [US 5,982,038]**. Claims 10 have been rewritten. Applicant requests reconsideration of this rejection, as now applicable to claim 11 and 23, for the following reasons:

- 1) The apparatus of applicant’s current invention is different than the disclosure of Volz et al.

- a. Volz et al.’s 30, 32 are “a pair of contact retaining members” (col 3, lines 19-24) for “a flexible film member 52” (col.3 line 64). These members are used to support and compress between cover member 20, daughter card 14, film 52, and mother board. These are different than the expansion connectors 11 of applicant’s current invention.

- b. The expansion zone is different, Volz et al.’s expansion zone on mother board dose not have solder area, and no connector. They content the means to fasten the bass assembly 18 and so on. The on PCB expansion zone 11, (12) of the applicant’s current invention is a on computer mother board PCB copper laminate ground plane surround with solderable zone 111, (121) for solder the corresponding metal housing cover 20. The on PCB expansion

zone 11, (12) of the applicant's current invention also contents a connector 113.

5 c. Daughter card 14 of Volz et al.'s disclosure are part of the mechanical structure as whole, and is mounted by cover member 20 onto base assembly 18, and then connecting to mother board 12 via film 52. The add-on expansion daughter cards of applicant's current invention is a computer hardware expansion card with a connector means that can be mount to the connector in the on PCB expansion zone 11.

10 d. The cover member 20 of Volz et al. comprises multiple complicated supporting structures for daughter card, and need to mate mount onto the base assembly 18. The metal housing cover 20 of the applicant's current invention is designed with a open base that can be soldered onto mother board 10 directly at the solderable surrounding zone 111 of on PCB expansion zone 11.

15 e. Ground shield are provided differently.

20 i. Volz et al. provide a ground shield for daughter cards with sheet metal 64 and the base assembly 18 mounting onto the mother board. The applicant's current invention provides ground shielding by the on PCB expansion zone 11 on mother board 10 directly without additional base assembly and/or sheet metal.

25 ii. There are not ground contact fingers 72 like Volz's disclosure in the applicant's current invention.

2) It is not possible to combine Volz et al. with Higgins III. The last OA suggested " to solder the shield housing cover onto the print circuit board of Volz et al.". There are two print circuit boards involved in Volz et al.'s

apparatuses. The one is the expansion daughter card, obviously, if the cover member to be made in metal and solder onto the daughter card, then it will cause the changing of redesign of daughter card to be solderable with the cover member 20 and also the consequential changes of the sequential connectors (fig. 1, fig. 13-15) and base assembly 18 and so on. The other print circuit board is the mother board 12. The applicant suggest that it is impossible to fabricate the cover member 20 of Volz et al. and solder it directly on to the mother board 12, due to the fact that cover member 20 has to be mount onto the base assembly 18. If one has to solder the metallic cover member 20 onto the mother board 12, then base assembly 18 has to be removed, and the design scope of Volz et al. will be changed. Still further, the planar sequentially connecting apparatuses make it almost impossible to solder the cover onto base assembly, and that's one of the reasons that Volz et al. used complicated mechanic to mount the daughter board 14. Accordingly, the applicant suggests that "to solder the shield housing cover onto the printed circuit board of Volz et al." is inappropriate.

- 3) The last OA also suggested "to add heat conducting material in the electronic apparatus of Volz et al., as modified, as suggested by Toy et al., for the purpose of providing better heat dissipation from the daughter board." It is possible to add heat conducting material in Volz et al.'s apparatuses. However, as discussed above, it is improper to solder the metallic cover over the printed circuit board, even if the heat conduction material is add to Volz et al.'s apparatuses, the new apparatuses still be different than the applicant's current invention. Further, it is very possible that adding heat conducting material will result in much more complicated work of expanding daughter cards in to the system. This is in contradict to Vlotz et al.'s intention of the invention "offers many features and benefits, such as a user friendly system, modular versatility, high density ..." (col. 1

lines 55-59). Accordingly, the applicant suggests that “to add heat conducting material in the electronic apparatus of Volz et al., as modified, as suggested by Toy et al., for the purpose of providing better heat dissipation from the daughter board” is improper.

- 5 4) Even if combine Volz et al. with Higgins III, the new apparatus still cannot be soldered onto the mother board 12 directly.

Regarding to “Response to Arguments”

10 The last OA responded to Applicant’s arguments filed 09-01-04. The applicant’s respectfully accept the responds [1],[2] and [4]. And the applicant has amended the patent application accordingly in the OA. However, the applicant cannot agree with the responds [3] “ In this case, both Volz and Gessaman are directed providing shielding structures on printed circuit boards. A skilled artisan would
15 have been to combine the beneficial shielding properties of the metal shielding enclosure and the stamping method used to fabricate the shield of Gessaman for the shield of Volz.”, because of following:

- 1) Volz is providing different shielding structure on printed circuit board. Volz provided “ a ground shielding member 64” covering over base assembly
20 18 (col.4, lines 3- 9). After assembled, the edge tabs 66 will contact the grounding tabs of mother board 12 (col.4, lines 9-13). Obviously, Volz is providing the shield between daughter card 14 and mother board 12 with shield member 64 on top of base assembly 18. This is a different apparatus in different field than Gessaman.
- 25 2) Gessaman only provided shielding structure on component printed circuit board 4, not the main circuit board 44. There is no expansion daughter card involved in this apparatus. The shield cover 8 is above the component circuit board 4, and making ground contact with main circuit

board 44 via leg 22 and its distal end 72. This is a different apparatus in different field than Voltz.

- 3) Neither it is possible nor Voltz suggested possibility of fabricating the cover member 20 in stamping sheet metal. The cover member 20 and base assembly 18 of Voltz are shaped in complicated way in order to mount the daughter card 14 and the film 52, and fulfill the function of sequential connection. Accordingly, the applicant suggests that "the stamping method used to fabricate the shield of Gessaman for the shield of Voltz." is improper.

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The applicant therefore submits that combination of Voltz and Gessaman is not justified and therefore is improper.

15 **Conclusion**

For all of the above reasons, the applicant submits that the specification and claims are now in proper form, and that the claims all define patentably over the prior art. Therefore he submits that this application is now in condition for allowance, which action he respectfully solicits.

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Conditional Request For Constructive Assistance

Applicant has amended the specification and claims of this application so that they are proper, definite, and define novel structure which is also unobvious. If, for any reason this application is not believed to be in full condition of allowance, Applicant respectfully request the constructive assistance and suggestions of the Examiner pursuant to M.P.E.P. § 2173.02 and § 707.07(j) in order that the

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undersigned can place this applicant in allowable condition as soon as possible
and without the need for further proceedings.

Very respectfully,

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A handwritten signature in black ink, appearing to read 'F. Zhang', with a long, sweeping horizontal stroke extending to the right.

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Date: 2005 FEB 8